Claims

1. A video scrambling method comprising:

scrambling a video signal to generate a scrambled video signal; and

coding the scrambled video signal in an inter-picture predictive encoding

mode,

wherein the scrambling includes selecting from the video signal a picture

unused as a reference picture for inter-picture prediction, and replacing slices of the

selected picture in units of m slices which are consecutive in a vertical direction in the

picture.

2. The video scrambling method according to claim 1, further comprising

generating a scramble pattern for scrambling the video signal, generating descramble

key information representing the scramble pattern, and multiplexing the descramble

key information to at least one of the video signal to be coded, the scrambled video

signal, the coded video data, and audio data corresponding to the coded video data.

3. The video scrambling method according to claim 2, wherein the

multiplexing multiplexes a digital water mark signal corresponding to the descramble

key information to at least one of the video signal to be coded, the scrambled video

signal, the coded video data, and audio data corresponding to the coded video data.

4. A video scrambling method comprising:

coding a video signal in an inter-picture predictive mode to generate first

coded video data; and

scrambling the first coded video data,

wherein the scrambling includes selecting from the first coded video data second coded video data corresponding to a picture unused as a reference picture for inter-picture prediction, and replacing the selected second coded video data corresponding to slices of the picture in units of m slices which are consecutive in a vertical direction in the picture.

5. The video scrambling method according to claim 4, further comprising generating a scramble pattern for scrambling the first coded video data, generating descramble key information representing the scramble pattern or initial data for creating the scramble pattern, and multiplexing the descramble key information to at least one of the video signal to be coded, the first coded video data scrambled, the first coded video data, and audio data corresponding to the coded video data.

6. The video scrambling method according to claim 5, wherein the multiplexer multiplexes a digital water mark signal corresponding to the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

7. The video scrambling method according to claim 4, wherein the scrambling includes adding an offset to a vertical component of a motion vector of macroblocks forming the slices in accordance with the replacement of the coded video data, and multiplexing an added result to the coded video data.

8. The video scrambling method according to claim 7, further comprising generating a scramble pattern for scrambling the first coded video data, generating descramble key information representing the scramble pattern or initial data for creating the scramble pattern, and multiplexing the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

9. The video scrambling method according to claim 8, wherein the multiplexing multiplexes a digital water mark signal corresponding to the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

10. A video scrambling method comprising:

scrambling a video signal to generate a scrambled video signal; and

coding the scrambled video signal in an interframe predictive mode,

wherein said scrambling includes selecting from the video signal a picture unused as a reference picture for inter-picture prediction in said coding unit, dividing macroblocks in a slice of the selected picture in units of m consecutive macroblocks, dividing the m consecutive macroblocks in units of n consecutive macroblocks (n < m), and replacing the n macroblocks in a horizontal direction.

11. The video scrambling method according to claim 10, further comprising generating a scramble pattern for scrambling the video signal, generating descramble key information representing the scramble pattern or initial data for creating the scramble pattern, and multiplexing the descramble key information to at least one of

the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

12. The video scrambling method according to claim 11, wherein the multiplexing multiplexes a digital water mark signal corresponding to the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

13. A video scrambling method comprising:

coding a video signal in an inter-picture predictive coding first coded video data; and

scrambling the first coded video data,

wherein the scrambling includes selecting from the coded video data second coded video data corresponding to a frame unused as a reference picture for inter-picture prediction, dividing macroblocks in a slice of the frame of the selected second coded video data in units of m macroblocks, dividing the m macroblocks in units of n macroblocks (n < m), and replacing the n macroblocks in a horizontal direction.

14. The video scrambling method according to claim 13, further comprising generating a scramble pattern for scrambling the first coded video data, generating descramble key information representing the scramble pattern or initial data for creating the scramble pattern, and multiplexing the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

15. The video scrambling method according to claim 14, wherein the multiplexing multiplexes a digital water mark signal corresponding to the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

16. The video scrambling method according to claim 13, wherein the scrambling includes adding an offset to a horizontal component of a motion vector of each of the macroblocks forming the slice in accordance with the replacement of the coded video data, and multiplexing an added result to the coded video data.

17. The video scrambling method according to claim 16, further comprising generating a scramble pattern for scrambling the first coded video data, generating descramble key information representing the scramble pattern or initial data for creating the scramble pattern, and multiplexing the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

18. The video scrambling method according to claim 17, wherein the multiplexing multiplexes a digital water mark signal corresponding to the descramble key information to at least one of the video signal to be coded, the scrambled video signal, the coded video data, and audio data corresponding to the coded video data.

19. A video scrambling method comprising:

scrambling a video signal to generate a scrambled video signal; and

coding the scrambled video signal in an inter-picture predictive coding mode,

wherein the scrambling includes selecting from the video picture signal a

picture unused as a reference picture for inter-picture prediction, replacing slices of

the selected picture in units of p slices which are consecutive in a vertical direction in

the picture, dividing the macroblocks in units of m consecutive macroblocks, dividing

the m consecutive macroblocks in units of n consecutive macroblocks (n < m), and

replaces the n consecutive macroblocks.

20. A video scrambling method comprising:

coding a video signal in an inter-picture predictive coding mode to generate

first coded video data; and

scrambling the first coded video data,

wherein the scrambling includes selecting from the first coded video data

second coded video data corresponding to a picture unused as a reference picture for

inter-picture prediction, and replacing the selected second coded video data in units of

p slices of the picture which are consecutive in a vertical direction in the picture,

dividing macroblocks of each of the slices in units of m macroblocks, dividing the m

macroblocks in units of n macroblocks (n < m), and replacing the second coded video

data corresponding to the n macroblocks.